

**§285.91. Tables.**

The following tables are necessary for the proper location, planning, construction, and installation of an OSSF.

(1) Table I. Effluent Loading Requirements Based on Soil Classification.

SOIL CLASS (Refer to Table VI)	LONG TERM APPLICATION ( $R_a$ ) *GALLONS PER ABSORPTIVE AREA (SF) PER DAY
Ia	>0.50
Ib	0.38
II	0.25
III	0.20
IV	0.1

\* The absorptive area consists of the bottom area of the excavation **PLUS** one foot of sidewall area around the full perimeter of the excavation.

The required absorptive area shall be calculated by the following formula:

$ABSORPTIVE\ AREA = Q/R_a$ , Where Q is the wastewater usage rate in gallons per day (see Table III, Relating to Wastewater Usage Rate).

(2) Table II. Septic Tank Minimum Liquid Capacity.

SEPTIC TANK MINIMUM LIQUID CAPACITY
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- A. Determine the applicable wastewater usage rate (Q) in TABLE III of 30 TAC Chapter 285.
- B. Calculate the minimum septic tank volume (V) as follows:
- For Q equal to or less than 250 gal/day:  
 $V = 750$  gallons
  - For Q greater than or equal to 251 gal/day but less than or equal to 350 gal/day:  
 $V = 1000$  gallons
  - For Q greater than or equal to 351 gal/day but less than or equal to 500 gal/day:  
 $V = 1250$  gallons
  - For Q greater than or equal to 501 gal/day but less than or equal to 1000 gal/day:  
 $V = 2.5 Q$
  - For Q greater than or equal to 1001 gal/day:  
 $V = 1,750 + 0.75Q$

NOTES: The inside liquid depth of the tank shall not be less than 30 inches.

Tank sizing in B (1)(2)(3) correspond to two, three and four bedroom single family dwellings, respectively.

(3) Table III. Wastewater Usage Rate.

This table shall be used for estimating the hydraulic loading rates only [ daily wastewater usage rate (Q) for sizing septic tank liquid capacity and drainfield area]. Sizing formulas are based on residential strength BOD<sub>5</sub>. Commercial/institutional facilities must pretreat their wastewater to 140 BOD<sub>5</sub> or increase disposal area. **Actual water usage data or other methods of calculating wastewater usage rates may be used by the system designer if it is accurate and acceptable to the Texas Natural Resource Conservation Commission or its authorized agents.**

TYPE OF FACILITY	USAGE RATE GALLONS/DAY (Without Water Saving Devices)	USAGE RATE GALLONS /DAY (With Water Saving Devices)
Single family dwelling (one or two bedrooms) - less than 1,500 square feet.	225	180
Single family dwelling (three bedrooms) - less than 2,500 square feet.		
Single family dwelling (four bedrooms) - less than 3,500 square feet.	300	240
Single family dwelling (five bedrooms) - less than 4,500 square feet.		
Single family dwelling (six bedrooms) - less than 5,500 square feet.	375	300
Greater than 5,500 square feet, each additional 1,500 square feet or increment thereof.	450	360
	525	420
	75	60
Condominium or Townhouse (one or two bedrooms)	225	180
Condominium or Townhouse (each additional bedroom)	75	60
Mobile home (one or two bedrooms)	225	180
Mobile home (each additional bedroom)	75	60
Country Clubs (per member)	25	20
Apartment houses (per bedroom)	125	100
Boarding schools (per room capacity)	50	40
Day care centers (per child with kitchen)	25	20
Day care centers (per child without kitchen)	15	12
Factories (per person per shift)	15	12
Hospitals (per bed)	200	160
Hotels and motels (per bed)	75	60
Nursing homes (per bed)	100	80
Laundries (self service per machine)	250	200
Lounges (bar and tables per person)	10	8
Movie Theaters (per seat)	5	4
Office buildings (no food or showers per occupant)	5	4
Office buildings (with food service per occupant)	10	
Parks (with bathhouse per person)	15	12
Parks (without bathhouse per person)	10	
Restaurants (per seat)	35	28
Restaurants (fast food per seat)	15	
Schools (with food service & gym per student)	25	20
Schools (without food service)	15	
Service stations (per vehicle)	10	8
Stores (per washroom)	200	160
Swimming pool bathhouses (per person)	10	8
Travel trailer/RV parks (per space)	50	40
Vet clinics (per animal)	10	8
Construction sites (per worker)	50	40
Youth camps (per camper)	30	24

(4) Table IV. Required Testing and Reporting.

Type and Size of Treatment Unit	Frequency of Site Visits	Required Tests	Minimum Acceptable Test Results
Any Treatment Method in Conjunction with Surface Irrigation	3 Per Year	One BOD <sub>5</sub> and TSS Grab Sample Per Year (commercial and institutional facilities only)  Chlorine Residual or Fecal Coliform at Each Site Visit	BOD <sub>5</sub> and TSS Grab Samples Not To Exceed 65 mg/l  1 mg/l Residual in Pump Tank or Fecal Coliform Not To Exceed 200 MPN/100 ml (CFU/100 ml)
Non Standard	Permit Specific	Permit Specific	Permit Specific

(5) Table V. Criteria for Standard Subsurface Disposal Methods.

FACTORS	SUITABLE (S)	UNSUITABLE (U)
Topography	Slopes 0-30%	Slopes greater than 30% Complex slopes.
Subsoil Texture	Soil Class Ib, II, or III Sandy Soils Loamy Soils	Soil Class Ia & IV Clayey soils (Except for pumped effluent systems in Class IV soils).
Subsoil Structure	Class Ib & II Structure not significant	Platy structure. Fractured rock. Massive clayey soil.
Soil Depth	Suitable soils greater than 24 inches below bottom of excavation.	Suitable or provisionally suitable soil less than 24 inches below excavation bottom.
Restrictive Horizon	No restrictive horizon within 24 inches of the bottom of the proposed excavation.	Restrictive horizon within 24 inches of the bottom of the proposed excavation.
Groundwater	No indication of groundwater within 24 inches of the bottom of the proposed excavation.	Drainage mottles within 24 inches of the bottom of the proposed excavation.
Flood Hazard	No flooding potential.	Areas located in the regulatory floodway. Depressional areas without adequate drainage.
Other		Fill material. Potential health hazards or groundwater contamination.

A ternary diagram for soil texture classification. The vertices represent 100% Sand (bottom left), 100% Silt (bottom right), and 100% Clay (top). The diagram is divided into regions for various soil types: Sand, Loamy Sand, Sandy Loam, Loam, Silty Loam, Silty Clay, Clay, Silty Clay Loam, and Clay Loam. A thick black line outlines a specific region, and a smaller thick black line outlines a sub-region within it. The regions are labeled with Roman numerals I, II, III, and IV.

Clay - Smaller than 0.002 mm in diameter.  
Silt - 0.05 to 0.002 mm in diameter.  
Sand - 2.0 to 0.05 mm in diameter.  
Gravel - Greater than 2.0 mm in diameter.  
mm = millimeter

Note 1: Sand shall be free of organic matter and shall be composed of silica, quartz, mica, or any other stable mineral.

Note 2: Class Ia soils contain more than 30% gravel, therefore, they are not portrayed on the soil triangle.

(7) Table VII. Yearly Average Net Evaporation (Evaporation - Rainfall).

REPORTING STATION	NET EVAPORATION*, RET INCHES/DAY
Amarillo	0.21
Austin	0.14
Beaumont	0.04
Big Spring	0.24
Brownsville	0.15
Chilicothe	0.20
Canyon Lake	0.15
College Station	0.12
Corpus Christi	0.15
Daingerfield	0.08
Dallas	0.14
El Paso	0.26
Fort Stockton	0.25
Houston	0.07
Laredo	0.23
Lubbock	0.21
Nacogdoches	0.06
San Antonio	0.15
San Angelo	0.23
Temple	0.15
Throckmorton	0.19
Tyler	0.08

\* The calculations for all values listed include a 20% run-off consideration.

(8) Table VIII. OSSF Excavation Length (3 Feet in Width or Less).

Daily Sewage Flow (Q) <sup>2</sup>	Excavation Length (Feet)								
	Soil Class Ib			Soil Class II			Soil Class III		
	For 1.5 Foot Excavation Width <sup>3</sup>	For 2.0 Foot Excavation Width	For 3.0 Foot Excavation Width	For 1.5 Foot Excavation Width <sup>3</sup>	For 2.0 Foot Excavation Width	For 3.0 Foot Excavation Width	For 1.5 Foot Excavation Width <sup>3</sup>	For 2.0 Foot Excavation Width	For 3.0 Foot Excavation Width
100	75	66	53	114	100	80	143	125	100
125	94	82	66	143	125	100	179	156	125
150	113	99	79	171	150	120	214	188	150
175	132	115	92	200	175	140	250	219	175
200	150	132	105	229	200	160	286	250	200
225	169	148	118	257	225	180	321	281	225
250	188	165	132	286	250	200	357	313	250
275	207	181	145	314	275	220	393	344	275
300	226	197	158	343	300	240	429	375	300
325	244	214	171	371	325	260	464	406	325
350	263	230	184	400	350	280	500	438	350
375	282	247	197	429	375	300	536	469	375
400	301	263	211	457	400	320	571	500	400
425	320	280	224	486	425	340	607	531	425
450	338	296	237	514	450	360	643	563	450
475	357	313	250	543	475	380	679	594	475
500	376	329	263	571	500	400	714	625	500

1. To determine excavation lengths, greater than 3 feet in width or where the area and width are known, use the formula provided in §285.33(a)(1)(A)(ii).
2. To determine excavation lengths (3 feet or less in width, but greater than or equal to 1.5 feet in width) for daily sewage flows (Q) not provided in this table, use the formula provided in §285.33(a)(1)(iii).
3. Minimum excavation width is 1.5 feet for all excavation lengths.



(9) Table IX. OSSF System Designation.

SYSTEM DESCRIPTION	SYSTEM TYPE	PLANNING MATERIAL TO BE SUBMITTED BY REGISTERED SANITARIAN OR REGISTERED PROFESSIONAL ENGINEER	INSTALLER REQUIREMENTS
Septic Tank & Absorptive Drainfield	Standard	No	Class I or II
Septic Tank & ET Drainfield(Unlined) (Lined)	Standard Standard	No No	Class I or II Class II
Septic Tank & Pumped Drainfield	Standard	No	Class I or II
Septic Tank & Leaching Chamber	Proprietary	No	Class I or II
Septic Tank & Gravelless Pipe	Proprietary	No	Class I or II
Septic Tank, Filter & Drip Emitter	Proprietary	Yes	Class II
Septic Tank & Low Pressure Dosing	Non-standard	Yes	Class II
Septic Tank & Absorptive Mounds	Non-standard	Yes	Class II
Septic Tank, Secondary Treatment, Filter & Surface Irrigation	Non-standard	Yes	Class II
Aerobic Treatment & Absorptive Drainfields	Proprietary	Yes	Class II
Aerobic Treatment & ET Drainfield	Proprietary	Yes	Class II
Aerobic Treatment & Leaching Chamber	Proprietary	Yes	Class II
Aerobic Treatment & Gravelless Pipe	Proprietary	Yes	Class II
Aerobic Treatment, Filter & Drip Emitter	Proprietary	Yes	Class II
Aerobic Treatment & Low Pressure Dosing	Proprietary	Yes	Class II
Aerobic Treatment & Absorptive Mounds	Proprietary	Yes	Class II
Aerobic Treatment & Surface Irrigation	Proprietary	Yes	Class II
Any Other Treatment System	Non-standard	Yes	Class II
Any Other Subsurface Disposal System	Non-standard	Yes	Class II
Any Other Surface Disposal System	Non-standard	Yes	Class II
Non-Standard Treatment and Surface Irrigation	Non-Standard	Engineer Only	Class II
Holding Tank	---	No	Class I or II

(10) Table X. Minimum Required Separation Distances for On-Site Sewage Facilities.

FROM	TO					
	Sewage Treatment Tanks or Holding Tanks	Soil Absorption Systems, & Unlined ET Beds	Lined Evapotranspiration Beds	Sewer Pipe With Watertight Joints	Surface Irrigation (Spray Area)	Drip Irrigation
Public Water Wells <sup>2</sup>	50	150	150	50	150	150
Public Water Supply Lines <sup>2</sup>	10	10	10	10	10	10
Private Water Well	50	100	50	20	100	100
Private Water Well (Pressure Cemented or Grouted to 100 ft. or Cemented or Grouted to Watertable if Watertable is Less Than 100 ft. deep)	50	50	50	20	50	50
Streams, Ponds, Lakes, Rivers (Measured From Normal Pool Elevation and Water Level); Salt Water Bodies (High Tide Only)	50	75, LPD (Secondary Treatment & Disinfection) - 50	50	20	50	25 when $R_d \leq 0.1$ 75 when $R_d > 0.1$ (With Secondary Treatment & Disinfection - 50)
Foundations, Buildings, Surface Improvements, Property Lines, Easements, Swimming Pools, and Other Structures	5	5	5	5	No Separation Distances Except: Property Lines - 10 Swimming Pools - 25	No Separation Distances Except <sup>4</sup> : Property Lines - 5
Sharp slopes, Breaks	0 (special support may be required for zero separation distances)	25	5	10	25	10 when $R_d \leq 0.1$ 25 when $R_d > 0.1$
Edwards Aquifer Recharge Features (See Rules & Regulations §313 of this Title Relating to Edwards Aquifer) <sup>3</sup>	50	150	50	50	150	100 when $R_d \leq 0.1$ 150 when $R_d > 0.1$

1. All distances measured in feet, unless otherwise indicated.
2. For additional information or revisions to these separation distances, see Rules & Regulations in §290 of this Title relating to Water Hygiene.
3. No OSSF may be installed closer than 75 feet from the banks of the Nueces, Dry Frio, Frio, or Sabinal Rivers downstream from the northern Uvalde County line to the recharge zone.
4. Drip irrigation lines may not be placed under foundations.

(11) Table XI. Intermittent Sand Filter Media Specifications (ASTM C-33).

Particle Size Distribution		
Sieve	Particle Size	Percent Passing
3/8 inch	9.50 mm	100
No. 4	4.75 mm	95 to 100
No. 8	2.36 mm	80 to 100
No. 16	1.18 mm	50 to 85
No. 30	0.60 mm	25 to 60
No. 50	0.30 mm	10 to 30
No. 100	0.15 mm	2 to 10
No. 200	0.075 mm	≤ 3

1. The sand shall have not more than 45% passing any one sieve and retained on the next consecutive sieve listed in TABLE XI.
2. The limit for material that can pass the No. 200 sieve shall not be more than 3%.
3. The fineness modulus shall not be less than 2.3 nor more than 3.1, and is defined as a numeric quantity to control the distribution of filter media particle sizes within the specified range for intermittent sand filters. The fineness modulus is calculated by adding the cumulative percents of samples retained on the following screens, dividing the sum by 100.

U.S. Bureau of Standards  
Sieve      Particle Size

3/8 inch	9.50 mm
No. 4	4.75 mm
No. 8	2.36 mm
No. 16	1.18 mm
No. 30	0.60 mm
No. 50	0.30 mm
No. 100	0.15 mm

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